National Institute for Occupational Safety and Health
NIOSH

TIP SHEET #2

Motorized Concrete Screeds

The Problem

When you hand screed concrete, you work bent over, and you have to use a strong grip to pull the board over the wet concrete. Your arms and shoulders exert a lot of force over and over.

Doing this work often or for a long period of time increases your chance of fatigue and pain. It puts major stresses on your back, knees, hands, arms, and shoulders, which may lead to serious muscle or joint injuries.

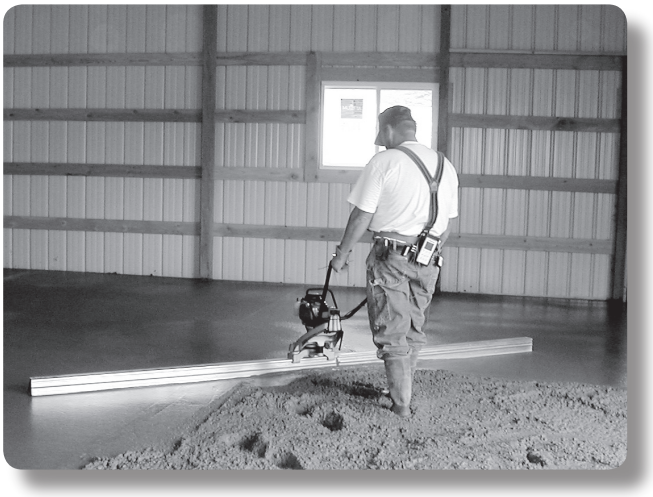
Problem: Hand screeding

One Solution

Use a **motorized screed** (also called a **vibratory screed**). You can work standing upright, and operating the screed takes much less effort than hand screeding.

This type of screed eliminates both screeding in a stooped position and the need for repeated arm and shoulder movements.

Solution: Motorized screeding



How It Works

The motorized screed consists of a blade or plow that floats on the concrete, one or two gasoline motors that vibrate the blade, metal support tubing, and handles to hold when you operate it.

It works best for small to medium-sized jobs.

Benefits for the Worker and Employer

A motorized screed should reduce a worker's chance of developing muscle and joint injuries. This equipment greatly reduces the physical effort needed for hand screeding, and eliminates the frequent and prolonged stooping. Little effort is needed to move the plow over the concrete surface.

Screeding with motorized equipment can be faster than hand screeding. Many contractors report improvements in productivity. The vibration of the blade improves the consolidation of the concrete and reduces time spent "bull floating" the surface.

There are some drawbacks. Although you can work around electrical or plumbing stubs, some hand screeding may still be necessary. Also, it can be difficult to move the screed to and from the work location. A single-engine screed weighs around 50 lbs., and can be awkward to lift and carry. Some screeds have a quick-release system to remove the plow from the frame, which makes carrying easier.

Vibration can also be a problem. It is important to protect workers from hand-arm vibration syndrome (HAVS), a nerve disorder that can become disabling. NIOSH measured vibration levels on three types of motorized screeds. Two had the gasoline engine placed at the bottom of the frame and above the plow. One screed had the engine placed on a single shaft, and the operator held the shaft below the engine. Vibration levels for the two types with the engine at the bottom were below the current recommended guidelines to prevent HAVS. The third screed, which was also older and poorly maintained, gave off much higher vibration that could exceed current HAVS guidelines. Higher vibration levels are expected when the engine is connected to the frame or shaft that the operator must grip. When buying a motorized screed, ask about vibration levels and test drive the screed.

Approximate Cost

A single-engine motorized screed costs around $1,500. A twin-engine model costs around $4,000 and requires two operators.

For More Information

- Products related to this solution are described at *www.cpwr.com/simple.html*. Products also may be found on the internet using the following search terms: "power screed," "vibratory screed," or "concrete screed."
- Local contractor tool and equipment suppliers or rental companies may be another source of information on products.
- For general information on this solution, check *www.cpwrconstructionsolutions.org* and *www.elcosh.org*.